Summary of Cancer Incidence and Mortality for 12 Mile River Area (Including Norris, Six Mile, Liberty, Central and Clemson, SC)

Cancer Incidence in 12 Mile River Area

Generally, the first step in the analysis of cancer data is to look at the number of new cancer cases diagnosed in a zip code and compare this to the number of cancer cases expected in a zip code. This first step determines if there is anything unusual with cancer patterns in the area. The number of "expected" cancer cases is calculated by using South Carolina cancer rates and applying them to the population of each zip code.

The zip codes surrounding the 12 Mile River are very small in population and the calculated "expected" number of cancer cases by site were usually less than 5. As a general rule, a cancer site with 5 or more expected cases will be analyzed; below that, the numbers are considered too small to be reliable. Therefore, analyzing the cancer data by zip code could not be performed.

In order to address concerns for these zip codes, a new area was defined. The cancer information for Norris (29667), Six Mile (29682), Liberty (29657), Central (29630) and Clemson (29631) were combined to create the 12 Mile River Area. Table 1 shows what types of cancer were diagnosed in the 12 Mile River Area from 1996-2000, and how many cancer cases were expected.

Overall, there were fewer cases of cancer than expected in the 12 Mile River area. Combining the data of the zip codes, a total of 688 new cancer cases occurred in the area, while 865 cases of cancer were expected to occur during this 5 year time period. The most common types of cancer in this region were prostate, lung/bronchus, female breast, and colon/rectum cancers. These types of cancer are also the most common cancers occurring across all of South Carolina.

Even when combining the information for this area, the 12 Mile River area is extremely small. Because the region is so small, the expected number of cancer cases by some types of cancer were fewer than 5; therefore these sites were not analyzed.

Cancer Deaths in 12 Mile River Area

To assess cancer deaths in this zip code, cancer mortality data from 1998-2002 were used. The process used to analyze new cancer cases was also used to analyze cancer deaths. Table 2 shows the number of cancer deaths that occurred in the 12 Mile River area and the number expected. Overall, a fewer number of cancer deaths occurred during 1998-2002. A total of 282 cancer deaths occurred in this region while 419 cancer deaths were expected. No specific types of cancer had a significantly higher number of cancer deaths occur then compared to the expected number of deaths.

As with the analysis for cancer cases, the number of cancer deaths by type of cancer were very small, and the expected number of deaths for some cancer type were fewer than 5. Therefore, a statistical test was not performed on the cancer deaths.

Conclusions

To summarize, the zip code regions surrounding the 12 Mile River are very small. A statistical analysis could not be performed on these individual zip codes, therefore a new region was defined. The 12 Mile River area was defined by combining the cancer incidence and death data from Norris, Six Mile, Liberty, Central and Clemson into one region. Looking at the newly defined area, the number of cancer cases which occurred between 1996-2000 was fewer than expected. The most common types of new cancers occurring were prostate, lung, breast and colon/rectum. These types of cancer are also the most common to occur within South Carolina. The number of deaths occurring in this region from 1998-2002 was also less than expected.

The observed number of cancer cases and deaths were much lower than the expected number. Upon a closer look at the population distribution for this region, 50% of the residents of the 12 Mile River area were under the age of 25 years. This could be attributed to the close location of Clemson University. The majority of cancer cases and deaths occurred among the older age residents as expected, since the risk of cancer and death increases with age.

In order for a true cancer cluster to exist, the number of cancers occurring must be more than would be expected by chance. Statistical testing is performed to determine if more cancers occur than

expected. In addition to statistical testing, there are several other criteria that determine whether a true cancer cluster exists. First, a cancer cluster would more likely involve rarer types of cancer rather than more common cancers like lung or prostate cancers. Also, a cancer cluster would occur with one specific type of cancer rather than having excesses in several different types of cancer.

Taking all these criteria into consideration, the South Carolina Central Cancer Registry determined there is no evidence of cancer clustering in the region of 12 Mile River.

For questions about this report, please contact Susan Bolick-Aldrich, MSPH, Director of the South Carolina Central Cancer Registry.

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Information on cancer mortality provided by the Division of Vital Records and the Division of Biostatistics, SC Dept. of Health and Environmental Control. *06/23/04*

Table 1. Analysis of New Cancer Cases in 12 Mile River Area*, 1996-2000

Site	Observed	Expected	Observed/Expected	Chi-SquareTest*
Prostate	131	142.09	0.92	0.87
Lung/Bronchus	106	132.58	0.80	5.33
Female Breast	84	122.74	0.68	12.23
Colon/Rectum	67	101.63	0.66	11.80
Bladder	32	34.39	0.93	0.17
Melanoma	33	30.28	1.09	0.25
Non-Hodgkins Lymphoma	33	28.94	1.14	0.57
Oral/Pharynx	11	24.45	0.45	7.40
Kidney/Renal Pelvis	22	21.40	1.03	0.02
Uterus	18	20.12	0.89	0.22
Pancreas	8	20.00	0.40	7.20
Leukemia	23	18.10	1.27	1.33
Stomach	4	14.15	0.28	7.28
Ovary	14	13.94	1.00	0.00
Brain/CNS	12	12.15	0.99	0.00
Cervix	8	11.82	0.68	1.23
Esophagus	6	11.45	0.52	2.59
Larynx	10	10.21	0.98	0.00
Thyroid	9	10.12	0.89	0.12
Multiple Myeloma	12	9.81	1.22	0.49
Liver	2	6.10	0.33	2.75
Hodgkins Disease	4	5.74	0.70	0.53
Soft Tissue	4	5.32	0.75	0.33
Unknown/Ill-Defined	14	NA	NA	NA
All Sites	694	864.67	0.80	33.69

*** Analysis includes combined incidence data from the following zip codes: 29667,29682,29657,29630,29631)**

Excludes in situ cases of cancer to allow for comparison.

Cancer sites with less than 5 cases of cancer expected are not analyzed due to the unreliability of statistical tests based on small numbers. These sites have been removed from this table.

*The Chi-Square statistical test allows us to determine if the difference between what is observed and what is expected is significant. If the value is greater than 3.84, then we are 95% confident that the observed number of cases is significantly different from the expected number of cases.

Prepared by: SC Central Cancer Registry, Office of Public Health Statistics and Information Services, Department of Health and Environmental Control, 2600 Bull St., Columbia, SC 29201
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Table 2. Analysis of Cancer Deaths in 12 Mile River Area*, 1998-2002

Site	Observed	Expected	Observed/Expected	Chi-SquareTest*
Lung/Bronchus	97	117.21	0.83	3.48
Colon/Rectum	23	42.67	0.54	9.07
Prostate	17	32.61	0.52	7.47
Female Breast	22	29.75	0.74	2.02
Unknown/Ill-Defined	11	26.16	0.42	8.78
Pancreas	15	23.26	0.64	2.93
Leukemia	9	15.97	0.56	3.04
Non-Hodgkins Lymphoma	10	15.49	0.65	1.95
Stomach	2	10.84	0.18	7.21
Brain/CNS	7	10.31	0.68	1.06
Esophagus	5	9.72	0.51	2.29
Multiple Myeloma	9	9.69	0.93	0.05
Ovary	11	9.36	1.18	0.29
Kidney/Renal Pelvis	4	8.55	0.47	2.42
Bladder	6	8.30	0.72	0.64
Liver	5	7.89	0.63	1.06
Oral/Pharynx	3	7.87	0.38	3.02
All Sites	284	419.34	0.68	43.68

*** Analysis includes combined death data from the following zip codes: 29667,29682,29657,29630,29631)**

Excludes in situ cases of cancer to allow for comparison.

Cancer sites with less than 5 cancer deaths expected are not analyzed due to the unreliability of statistical tests based on s mall numbers. These sites have been removed from this table.

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